



# ACE5017T

## 300mA Ultra Low Consumption CMOS LDO

### Description

The ACE5017T series are low dropout linear regulators and optimized to provide a high performance solution for battery power system to deliver low quiescent current. The devices offer a new level of cost effective performance in cellular phones, laptop and notebook computers, and other portable devices.

The ACE5017T series are designed to make use of low cost ceramic capacitors which ensure the stability of the output current, and enhance the efficiency in order to prolong the battery life of those portable devices.

The ACE5017T regulators are available in SOT-23-3 and SOT-23-5 packages. Standard products are Pb-free and Halogen free products.

### Features

- Input voltage : 2.3V~6.5V
- Output range : 1.2V~3.3V
- Output current: 300mA @ $V_{out}>2V$
- Dropout voltage: 100mV @  $I_{OUT}=100mA$
- Quiescent current: 1 $\mu$ A Typ.
- Shut-down current: < 0.1 $\mu$ A
- Recommend capacitor: 1 $\mu$ F

### Applications

- Reference voltage source
- Toys
- Bluetooth, wireless handsets
- Others portable electronic device

### Absolute Maximum Ratings

Symbol	Items	Value	Unit
$V_{IN}$	Input Voltage	-0.3~7	V
$V_{EN}$	Enable Pin	-0.3~7	V
$V_{PIN}$	All Other Pins	GND-0.3 to VDD+0.3	V
$P_{DMAX}$	Power Dissipation	0.3	W
$T_J$	Junction Temperature	-40~125	$^{\circ}C$
$T_{stg}$	Storage Temperature	-55 to 150	$^{\circ}C$
$T_{solder}$	Package Lead Soldering Temperature	260 $^{\circ}C$ , 10s	

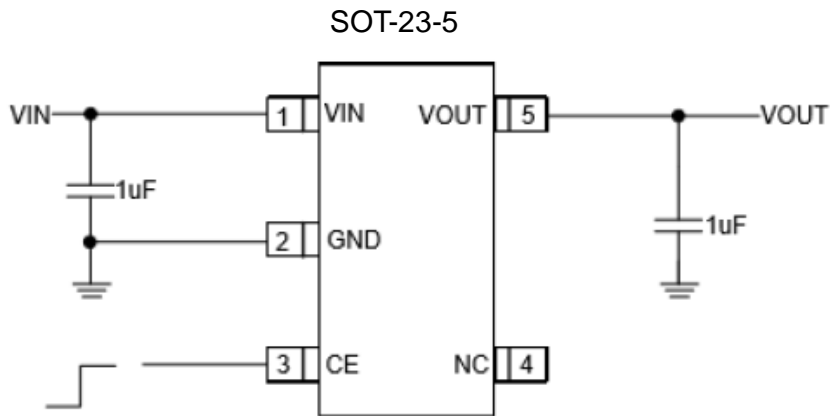
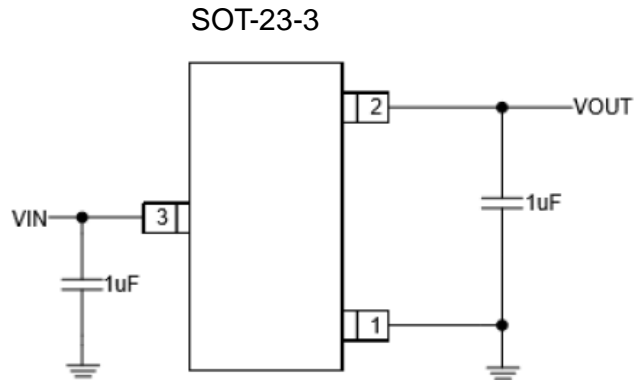
Note: Exceed these limits to damage to the device. Exposure to absolute maximum rating conditions may affect device reliability.



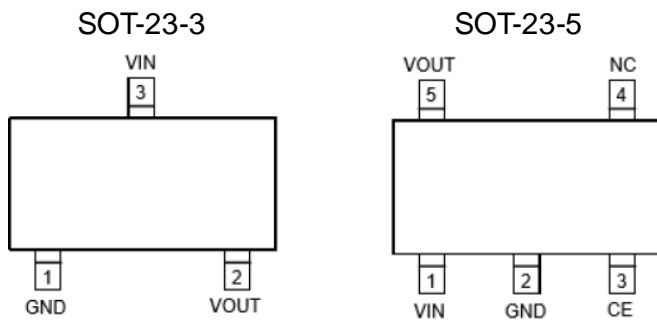
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### Typical Application



### Packaging Type



### Pin Description

PIN NO		Symbol	Description
SOT-23-3	SOT-23-5		
3	1	VIN	Input
1	2	GND	Ground
	3	CE	Chip Enable
	4	NC	Not Connected
2	5	VOUT	Output

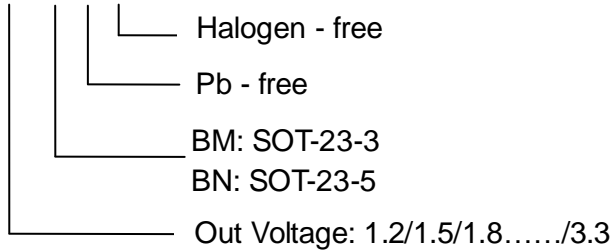


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### Ordering information

ACE5017TXX XX + H



### Recommended Operating Range

Symbol	Items	Value	Unit
$V_{IN}$	VIN Supply Voltage	0.9 to 6.5	V
$V_{EN}$	Enable Voltage	0.9 to 6.5	V
$T_{OPT}$	Operating Temperature	-40 to +85	°C

### Electrical Characteristics

The following specifications apply for  $V_{OUT}=3.3V$   $T_A=25^{\circ}C$ , unless specified otherwise.

Symbol	ITEMS	CONDITIONS	MIN	TYP	MAX	UNIT
$V_{IN}$	Input Voltage				6.5	V
$V_{OUT}$	$V_{OUT}$ range	$I_{OUT}=1mA$	-1%	$V_{OUT}$	1%	V
		$I_{OUT}=1mA$	-2%	$V_{OUT}$	2%	
$I_q$	Quiescent Current	$V_{OUT}=3.3V$ $I_{OUT}=0$		1	3	$\mu A$
$I_{limit}$	Current Limit	$V_{in}=V_{en}$ $V_{in}=5V$ $V_{out}=3.3V$		450		mA
$V_{drop}$	Dropout Voltage	$V_{OUT}=3.3V$ $I_{OUT}=200mA$		170	200	mV
		$V_{OUT}=3.3V$ $I_{OUT}=300mA$		250	300	
$\Delta V_{LINE}$	Line Regulation	$V_{IN}=2.7\sim 5.5V$ , $I_{OUT}=1mA$		0.01	0.15	%/V
$\Delta V_{Load}$	Load Regulation	$V_{OUT}=2.8V$ , $I_{OUT}=1\sim 300mA$		20	30	mV
$I_{SHORT}$	Short Current	$V_{EN}=V_{IN}$ , $V_{OUT}$ Short to $G_{ND}$ with $1\Omega$		90		mA
$I_{SHDN}$	Shut-down Current	$V_{EN}=0V$		0.1	1	$\mu A$
$V_{ENH}$	EN logic high voltage	$V_{IN}=5.5V$ , $I_{OUT}=1mA$	1.2			V
$V_{ENL}$	EN logic low voltage	$V_{IN}=5.5V$ , $V_{OUT}=0V$			0.4	V
$I_{EN}$	EN Input Current	$V_{EN}=0$ to 5.5V			1.0	$\mu A$

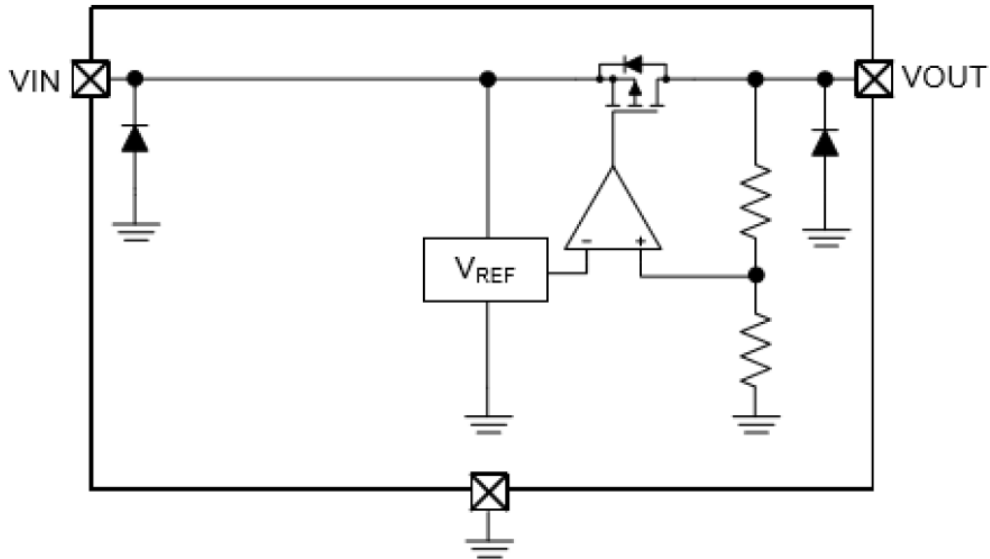


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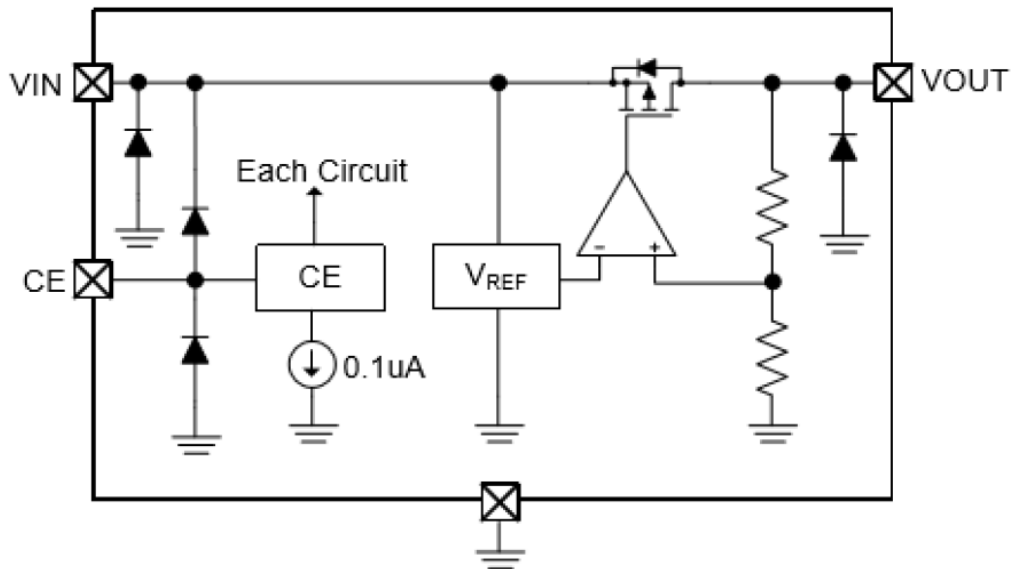
## 300mA Ultra Low Consumption CMOS LDO

### Block Diagram

SOT-23-3



SOT-23-5



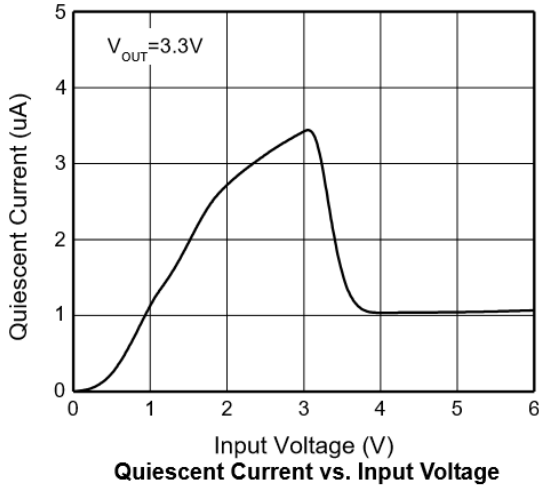


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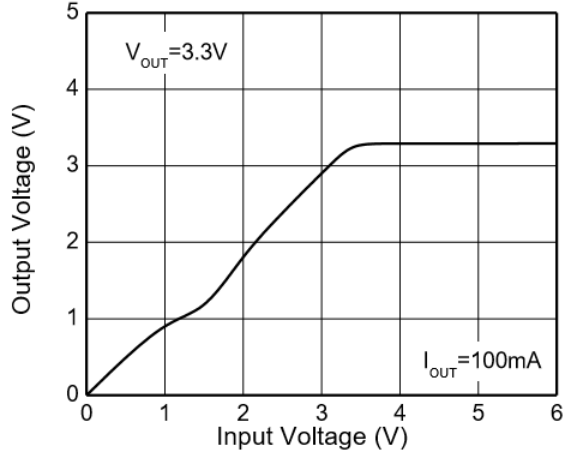
## 300mA Ultra Low Consumption CMOS LDO

### Typical Performance Characteristics

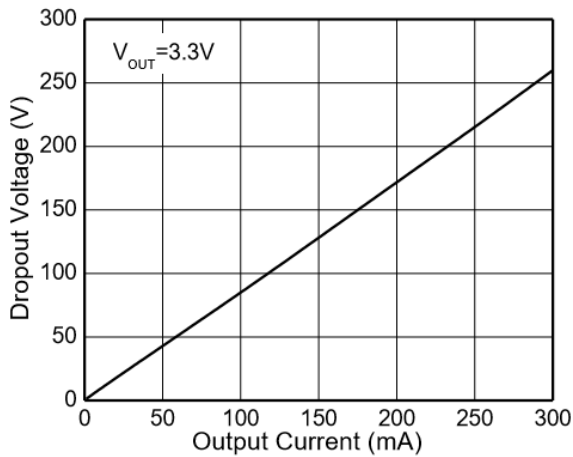
$C_{in}=1\mu F$ ,  $C_{out}=1\mu F$ ,  $T_{opt}=25^{\circ}C$ ,  $V_{in}=5V$   $V_{out}=3.3V$



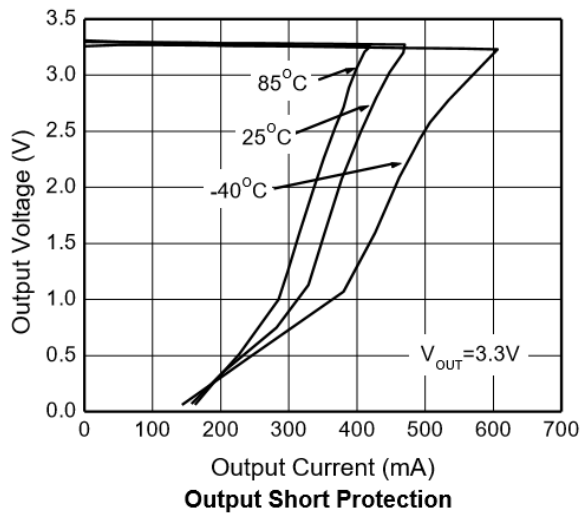
Quiescent Current vs. Input Voltage



Output Voltage vs. Input Voltage



Dropout Voltage vs. Output Current



Output Short Protection

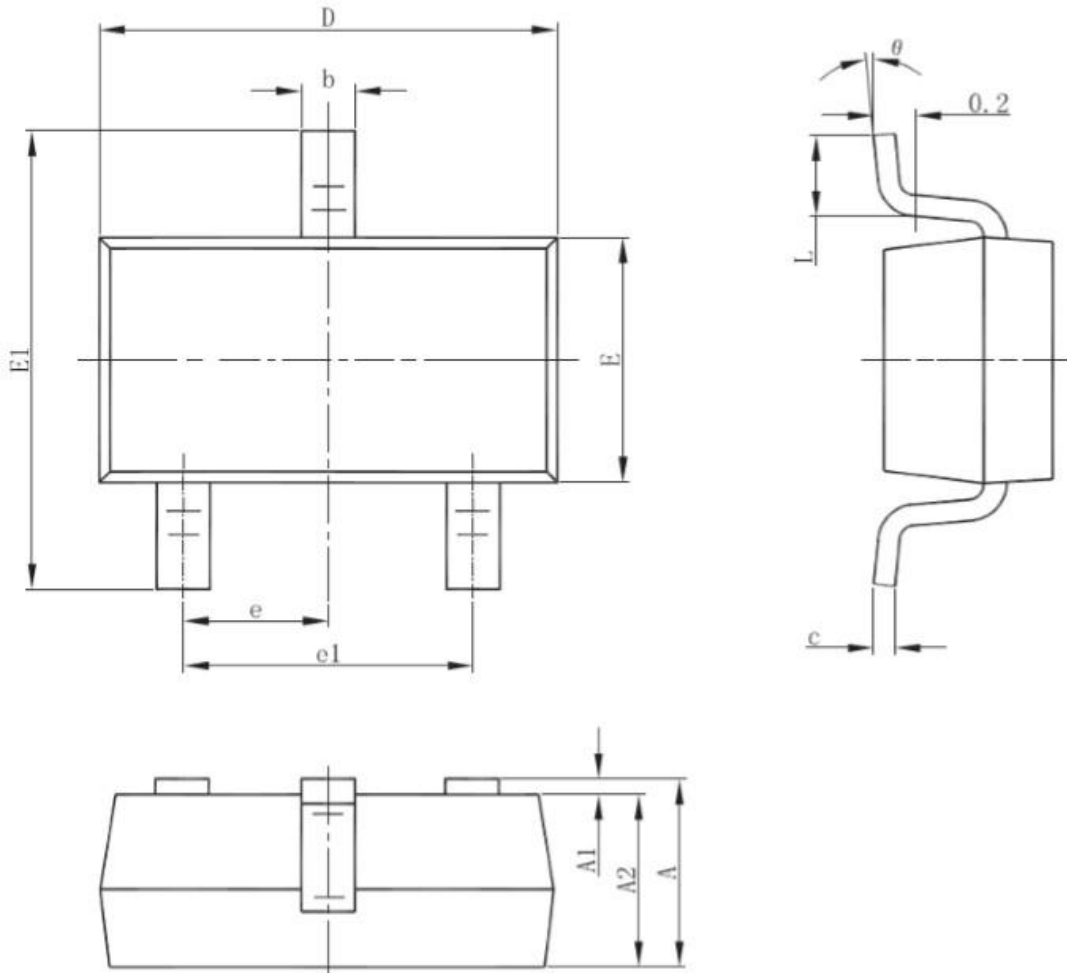


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### Packing Information

#### SOT-23-3



Symbol	Dimensions In Millimeters	
	Min.	Max.
A	1.050	1.250
A1	0.000	0.100
A2	1.050	1.150
b	0.300	0.500
c	0.100	0.200
D	2.820	3.020
E	1.500	1.700
E1	2.650	2.950
e	0.950(Basic)	
e1	1.800	2.000
L	0.300	0.600
theta	0°	8°

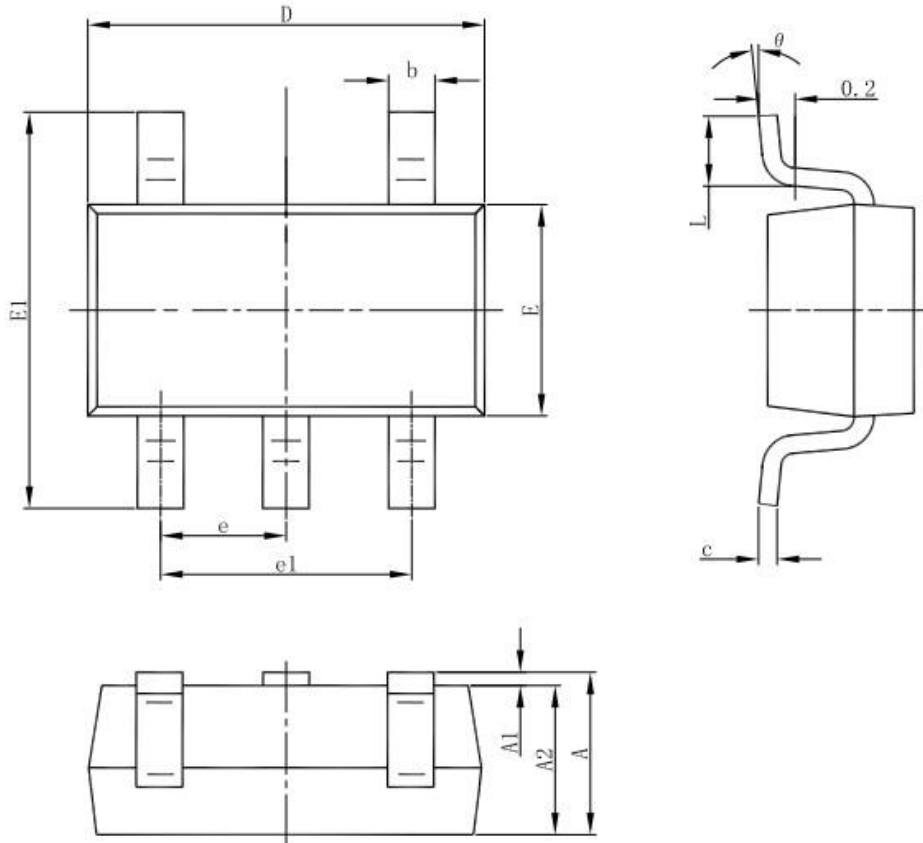


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## 300mA Ultra Low Consumption CMOS LDO

### Packing Information

#### SOT-23-5



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	1.050	1.250	0.041	0.049
A1	0.000	0.100	0.000	0.004
A2	1.050	1.150	0.041	0.045
b	0.300	0.500	0.012	0.020
c	0.100	0.200	0.004	0.008
D	2.820	3.020	0.111	0.119
E	1.500	1.700	0.059	0.067
E1	2.650	2.950	0.104	0.116
e	0.950(BSC)		0.037(BSC)	
e1	1.800	2.000	0.071	0.079
L	0.300	0.600	0.012	0.024
θ	0°	8°	0°	8°



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### Notes

ACE does not assume any responsibility for use as critical components in life support devices or systems without the express written approval of the president and general counsel of ACE Electronics Co., LTD.

As sued herein:

1. Life support devices or systems are devices or systems which, (a) are intended for surgical implant into the body, or (b) support or sustain life, and whose failure to perform when properly used in accordance with instructions for use provided in the labeling, can be reasonably expected to result in a significant injury to the user.
2. A critical component is any component of a life support device or system whose failure to perform can be reasonably expected to cause the failure of the life support device or system, or to affect its safety or effectiveness.

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